

Remarks/Arguments

Please reconsider this application in view of the following remarks.

Examiner Interview

Applicants appreciate the time and courtesy extended by Patent Examiner Caitlin Anne Kiechle and Supervisory Patent Examiner Roy King on August 12, 2011. During the Interview, Applicants' representative and the Examiners discussed the current rejection, which relies upon inherency under the standard of MPEP 2112 to establish (1) Applicants' claimed range of precipitated W of 0.005% to 0.1% in percent by mass and to establish (2) Applicants' claimed average thermal expansion coefficient between 20°C and 800°C less than about $12.6 \times 10^{-6}/^{\circ}\text{C}$.

Applicants' representative and the Examiners also discussed the following two new points regarding evidence of record in this application that shows that the steel product disclosed by the Kawabata reference does not necessarily possess Applicants' claimed precipitated W % or Applicants' claimed average thermal expansion coefficient:

- The first new point was illustrated in the Interview by reference to Applicants' disclosed steel products C, D, E, O, P, Q, R, S, T, which all have elemental compositions within the ranges and general processing conditions disclosed by the Kawabata reference but all fall outside Applicants' claimed precipitated W % and average thermal expansion coefficient ranges. Accordingly, Applicants' examples show that neither Applicants' claimed precipitated W % nor Applicants' claimed average thermal expansion coefficient are necessarily possessed in the steel product disclosed by the Kawabata reference.
- The second new point was illustrated in the Interview by reference to Applicants' disclosed steel products 1, 2 and B, which all share the same elemental composition that is within the ranges and general processing conditions of the Kawabata reference but one of which (B) falls outside Applicants' claimed precipitated W % and average thermal expansion coefficient ranges. Accordingly, Applicants' examples also show that neither Applicants' claimed precipitated W % nor Applicants' claimed average thermal expansion coefficient are necessarily possessed in the steel product of the Kawabata reference even for various steel samples having the same composition as one another.

Applicants' appreciate the Examiners' suggestion during the Interview that a rejection based on inherency may not be appropriate in view of the foregoing new points. Finally, Applicants' appreciate the Examiners' agreement to reconsider the rejection in view of this written Response.

Introductory Remarks

The remarks in this response are organized according to the following sections and subsections for the Examiner's convenience:

- I. The rejection alleges that Applicants' claimed precipitated W and average thermal expansion coefficient limitations would be expected in the steel of the Kawabata et al. reference under the standard of MPEP 2112.
 - a) The Office's rejection alleges that Applicants' claimed precipitated W and average thermal expansion coefficient limitations would be expected because the composition of the ferritic Cr-contained steel of Kawabata et al. is said to overlap with the composition of the steel of the instant invention and because the steel of Kawabata et al. is said to be made using a method similar to that of the instant invention, citing MPEP 2112.
 - b) MPEP 2112.01(I) requires a showing that the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes.
 - c) Under MPEP 2112.01(I), a *prima facie* case of anticipation or obviousness (if made) can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product.
- II. The Office has not established *prima facie* obviousness and the burden has not shifted to Applicants to establish non-obviousness.
 - a) The record shows that the claimed and prior art products are not identical or substantially identical in structure or composition.
 - b) The record shows that the claimed and prior art products are not produced by identical or substantially identical processes.
 - c) The burden to establish non-obviousness has not shifted to Applicants.
- III. Assuming *arguendo* that the Office has established *prima facie* obviousness, Applicants have successfully rebutted *prima facie* obviousness based on evidence of record in this application.
 - a) New Point 1: Applicants' examples establish that the steel of Kawabata et al. does not necessarily possess Applicants' claimed precipitated W and average thermal expansion coefficient limitations.
 - b) New Point 2: Applicants' examples establish that the steel of Kawabata et al. does not necessarily possess Applicants' claimed precipitated W and average thermal expansion coefficient limitations even for various steels having the same composition.
 - c) New Point 3: Examples of Kawabata et al. establish that the steel of Kawabata et al. does not necessarily possess Applicants' claimed precipitated W and average thermal expansion coefficient limitations.

For the Examiner's convenience, specific reference is made throughout these remarks to evidence already of record in this application.

Amendment Dated September 2, 2011
Reply to Office Action of May 5, 2011

I. THE REJECTION ALLEGES THAT APPLICANTS' CLAIMED PRECIPITATED W AND AVERAGE THERMAL EXPANSION COEFFICIENT LIMITATIONS WOULD BE EXPECTED IN THE STEEL OF THE KAWABATA ET AL. REFERENCE UNDER THE STANDARD OF MPEP 2112

Claim 13 recites (among others) the following limitations:

- 1) precipitated W is 0.005% to 0.1 % in percent by mass
- 2) average thermal expansion coefficient between 20°C and 800°C is less than about $12.6 \times 10^{-6}/^{\circ}\text{C}$.

The inventors discovered that the addition of W to the Fe--Cr ferritic alloys and a decrease in the amount of precipitated W remarkably contributed to a decrease in thermal expansion coefficient of the alloys. While the reason for this is not clear, Applicants believe it is because of several points. The first point is that, while grain boundaries essentially act as a cushion for thermal expansion, since the Laves phase is precipitated therein, the cushion effect is reduced, and consequently the thermal expansion coefficient is increased. The second point is that, when the amount of the precipitated W is increased in the alloy, the amount of solid soluted W is decreased, and consequently a decrease in the thermal expansion coefficient of the alloy is inhibited. However, even if the amount of precipitated W is slight, for example, only more than 0.1%, the decrease in thermal expansion coefficient of the alloy is inhibited, therefore the reason can not be explained only from the increase in the amount of dissolved W in the alloy. Thus, the first point, a decrease in effect as a cushion of the grain boundaries, is considered to be major. See Applicants' specification at paragraphs 0003 and 0004.

As discussed in the following sections, the Office's rejection alleges that Applicants' claimed precipitated W and average thermal expansion coefficient limitations would be expected in the steel of the Kawabata et al. reference under the standard of MPEP 2112. MPEP 2112.01(I) requires a showing that the claimed and prior art products are identical or substantially identical in structure or composition or are produced by identical or substantially identical processes. MPEP 2112.01(I) also states that a *prima facie* case of anticipation or obviousness (if made) can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product.¹

¹ The rejection explicitly refers to Inherency, which is consistent with the citation of MPEP § 2112 (titled Requirements of Rejection Based on Inherency; Burden of Proof). Whether or not the rejection refers to inherency, however, MPEP 2112 invokes principles of inherency. Accordingly, the associated legal standard, as stated in MPEP 2112(IV), requires that "the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." (citing *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Int. 1990)). Accordingly, even if the rejection did not expressly refer to inherency and instead merely alleged that "properties would be expected," the question should still be whether the allegedly inherent characteristic "necessarily flows from" the teachings of the applied prior art.

Amendment Dated September 2, 2011
Reply to Office Action of May 5, 2011

a) THE OFFICE'S REJECTION ALLEGES THAT APPLICANTS' CLAIMED PRECIPITATED W AND AVERAGE THERMAL EXPANSION COEFFICIENT LIMITATIONS WOULD BE EXPECTED BECAUSE THE COMPOSITION OF THE FERRITIC CR-CONTAINED STEEL OF KAWABATA ET AL. IS SAID TO OVERLAP WITH THE COMPOSITION OF THE STEEL OF THE INSTANT INVENTION AND BECAUSE THE STEEL OF KAWABATA ET AL. IS SAID TO BE MADE USING A METHOD SIMILAR TO THAT OF THE INSTANT INVENTION, CITING MPEP 2112

The sole rationale for the rejection of claims 13-17, 20, and 21, specifically with respect to Applicants' claimed precipitated W and Applicants' claimed average thermal expansion coefficient limitations, is set forth as follows:

- Claims 13-17, 20, and 21 stand rejected as obvious based on Kawabata et al. (US 5,626,694) for the reasons set forth in the Office Action dated October 15, 2010.
- The Office acknowledged that Kawabata et al. does not expressly teach Applicants' claimed precipitated W and average thermal expansion coefficient limitations:

"Kawabata differs from instant claim 13 because it does not specifically teach that [1] the precipitated W is 0.005% to 0.1 mass% or that [2] average thermal expansion coefficient between 20°C and 800°C is less than about $12.6 \times 10^{-6}/^{\circ}\text{C}$." Office Action dated October 15, 2010, at page 3, last paragraph.

- Citing MPEP 2112, the Office Action concludes that one would expect the steel of Kawabata to inherently have a similar amount of precipitated W and a similar average thermal expansion coefficient because "the composition of the ferritic Cr-contained steel of Kawabata overlaps with the composition of the steel of the instant invention and since the steel of Kawabata is made using a method similar to the method of the instant invention." Office Action dated October 15, 2010, bridging pages 3 and 4.

Based on the record of this application and the foregoing excerpts of the Office Action, the current rejection of claims 13-17, 20, and 21 is based on the allegation that one would expect the steel of Kawabata to inherently have a similar amount of precipitated W and a similar average thermal expansion coefficient under the standard of MPEP 2112. No other rationale is provided.

Amendment Dated September 2, 2011
Reply to Office Action of May 5, 2011

b) MPEP 2112.01(I) REQUIRES A SHOWING THAT THE CLAIMED AND PRIOR ART PRODUCTS ARE IDENTICAL OR SUBSTANTIALLY IDENTICAL IN STRUCTURE OR COMPOSITION, OR ARE PRODUCED BY IDENTICAL OR SUBSTANTIALLY IDENTICAL PROCESSES

MPEP 2112 sets forth general standards required for establishing inherency of claimed subject matter that is not expressly disclosed in the prior art. Specifically:

- MPEP 2112(IV) requires that missing descriptive subject matter must necessarily be present in the thing described in the prior art reference:

"To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.'"

- MPEP 2112(IV) also warns that inherency may not be established by mere possibilities:

"Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999).

- MPEP 2112(IV) also requires that the Examiner must provide a basis in fact and/or technical reasoning in relying upon the theory of inherency:

"In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." Citing *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990).

- MPEP 2112.01(I) sets forth the following standard for establishing obviousness based on substantially identical compositions or processes:

"Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. ... 'When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not.' ... Therefore, the *prima facie* case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product."

MPEP 2112.01(I) (case citations omitted) (emphasis in original).

Accordingly, the issue is whether the Office has established *prima facie* obviousness under the standard of MPEP 2112 by showing a sound basis for believing that the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes. In the terms of this application, the issue is whether the Office has shown a sound basis for believing that Applicants' claimed product and the product of Kawabata et al. are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes.

c) UNDER MPEP 2112.01(I), A PRIMA FACIE CASE OF ANTICIPATION OR OBVIOUSNESS (IF MADE) CAN BE REBUTTED BY EVIDENCE SHOWING THAT THE PRIOR ART PRODUCTS DO NOT NECESSARILY POSSESS THE CHARACTERISTICS OF THE CLAIMED PRODUCT

MPEP 2112.01(I) sets forth the following standard for rebutting *prima facie* obviousness:

"[T]he *prima facie* case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product."

MPEP 2112.01(I) (citing *In re Best*, 562 F.2d at 1255, 195 USPQ at 433) (emphasis in original).

Accordingly, MPEP 2112.01(I) cites to *In re Best* for its specific standard for rebutting a case of *prima facie* obviousness that is based on similarities between prior art and claimed products and processes to account for a characteristic that is not expressly disclosed in the prior art (i.e., by showing that the prior art products do not necessarily possess the characteristics of the claimed product). In terms of this application, a *prima facie* case (if made) can be rebutted by evidence showing that the steel product of Kawabata et al. does not necessarily possess Applicants' claimed precipitated W and Applicants' claimed average thermal expansion coefficient limitations.

Amendment Dated September 2, 2011
Reply to Office Action of May 5, 2011

II. THE OFFICE HAS NOT ESTABLISHED PRIMA FACIE OBVIOUSNESS AND THE BURDEN HAS NOT SHIFTED TO APPLICANTS TO ESTABLISH NON-OBVIOUSNESS

As stated in MPEP 2142, "the examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness."²

Also, it is necessary for the Office to explain how every claim limitation is met in order to establish *prima facie* obviousness. As stated in MPEP 2143.04, "[a]ll words in a claim must be considered in judging the patentability of that claim against the prior art." (citing *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)). "[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007).

In this case, the reasoning provided in the current rejection is limited to a statement that "the composition of the ferritic Cr-contained steel of Kawabata overlaps with the composition of the steel of the instant Invention and ... the steel of Kawabata is made using a method similar to the method of the instant invention." Therefore, the rejection relies on an expectation of Applicants' claimed precipitated W and Applicants' claimed average thermal expansion coefficient limitations based on the following rationale:

- o the composition of the ferritic Cr-contained steel of Kawabata overlaps with the composition of the steel of the instant invention
- o the steel of Kawabata is made using a method similar to the method of the instant invention

No other factual or technical reasoning is provided.

For at least the reasons set forth in the following subsections, the Office Action has not established *prima facie* obviousness and the burden has not shifted to Applicants to establish non-obviousness. Specifically, as set forth in the following subsections, the claimed and prior art products are not identical or substantially identical in structure or composition, and they are not produced by identical or substantially identical processes.

² Specifically, when relying upon MPEP 2112, "the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." MPEP 2112(IV) (quoting *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original)).

Amendment Dated September 2, 2011
Reply to Office Action of May 5, 2011

a) THE RECORD SHOWS THAT THE CLAIMED AND PRIOR ART PRODUCTS ARE NOT IDENTICAL OR SUBSTANTIALLY IDENTICAL IN STRUCTURE OR COMPOSITION

The evidence already of record in this application shows that the claimed and prior art products are not identical or substantially identical in structure or composition. Specifically, as noted below, Applicants' claimed steel and products of Kawabata et al. are not identical or substantially identical in structure and composition.

Applicants' claimed steel includes, among other features, the following specific steel composition:

- (1) W of about 2.05 to about 6.0% in percent by mass,
- (2) precipitated W of 0.005% to 0.1% in percent by mass, and
- (3) average thermal expansion coefficient between 20°C and 800°C less than about $12.6 \times 10^{-6}/^{\circ}\text{C}$.

As acknowledged in the Office Action, Kawabata differs from instant claim 13 because it does not specifically teach precipitated W of 0.005% to 0.1 mass% or average thermal expansion coefficient between 20°C and 800°C is less than about $12.6 \times 10^{-6}/^{\circ}\text{C}$.

During the Interview, the Examiners pointed to the specific example in column 14 of Kawabata et al. that discloses annealing in which selected cold rolled sheet samples 1-32, 66, 68, 70, 72-74 were heated at 1150°C. However, none of these samples include any W and therefore differ from Applicants' claimed steel at least in terms of W content and precipitated W %.

During the Interview, the Examiners also pointed to selected cold rolled sheet sample 86, the sole steel sample of Kawabata et al. that contains any W (1.5 wt%). However, even that sample differs from Applicants' claimed steel at least in terms of W content (it is outside the claimed range of about 2.05 to about 6.0% in percent by mass). Additionally, the Declaration of Yasushi Kato submitted with Applicants' Response of March 9, 2011 establishes that sample 86 would also differ from Applicants' claimed steel in terms of precipitated W %.

Accordingly, evidence of record in this application shows that Applicants' claimed steel and the steel product of Kawabata et al. are not identical or substantially identical in structure or composition.

b) THE RECORD SHOWS THAT THE CLAIMED AND PRIOR ART PRODUCTS ARE NOT PRODUCED BY IDENTICAL OR SUBSTANTIALLY IDENTICAL PROCESSES

Evidence already of record in this application also shows that the claimed and prior art products are not produced by identical or substantially identical processes. Specifically, as noted below, Applicants' claimed steel and the steel of Kawabata et al. are produced by processes that are not identical or substantially identical.

As background, Kawabata et al. includes a disclosure of general process conditions such as annealing conditions. See, for example, the following disclosure of Kawabata at column 6, line 60 - column 7, line 2:

"After such a cold rolling, annealing-pickling or bright annealing may be conducted according to the usual manner. ... According to the invention, production conditions other than those in the above steps are not particularly critical, and may be within usual manner. For example, it is favorable that the heating temperature of slab is 1000-1300 C, and the annealing temperature is 700-1300 C"

In contrast to this disclosure of general annealing conditions, Applicants discovered a steel product having the following particular characteristics that result from careful control of process conditions:

Precipitated W %

The claimed precipitated W % has been discovered to decrease the thermal expansion coefficient of alloys. For Example, Applicants' FIG. 4 shows the relationship between precipitated W and thermal fatigue life. See paragraph 0025 and also paragraphs 0003 and 0004.

The control of precipitated W % (including adding W and decreasing precipitated W) depends on several factors according to Applicants' disclosed process:

- Amount of W - simply adding W is not sufficient because a large amount of precipitated W actually increases the thermal expansion coefficient. Paragraph 0003.
- Annealing conditions - FIG. 5 shows the influence of annealing temperatures on the amount of precipitated W. Paragraph 0026
 - Hot-rolled-sheet annealing temperature: preferably 950 to 1150 C, more preferably 1020 to 1150 C.
 - Finish annealing temperature: 1020 to 1200 C. Paragraph 0066 and paragraphs 0048, 0049 and 0062.

Thermal Expansion Coefficient

Benefits of the claimed thermal expansion coefficient include suitability for applications in which a heat cycle is repeated between high and low temperatures. Paragraph 0001.

The control of thermal expansion coefficient depends on several factors according to Applicants' disclosed process:

- FIG. 1 shows the influence of the amounts of added W and precipitated W on an average thermal expansion coefficient. Paragraph 0022.
- When the precipitated W exceeds 0.1%, the decrease in thermal expansion coefficient due to the addition of W is small. Finish annealing temperature must be increased significantly in order to restrain the precipitated W to be less than 0.005%, which results in extremely coarsened crystal grains, consequently orange peel occurs during working, cause a crack during working. Paragraphs 0035 and 0062.

Therefore, the record itself establishes that Applicants' claimed steel and the steel of Kawabata et al. are produced by processes that are not identical or substantially identical.

During the Interview, the Examiners pointed to the specific example in column 14 of Kawabata et al. that discloses annealing in which selected cold rolled sheet samples 1-32, 66, 68, 70, 72-74 were heated at 1150°C. As noted previously, none of these samples include any addition of W in their process and therefore differ from Applicants' process at least in terms of the control of W content and precipitated W %. Additionally, it is noted that the selected cold rolled sheet samples 1-32, 66, 68, 70, 72-74 represent 38 of a total of 101 samples taught by Kawabata et al. Accordingly, the selected samples represent much less than half the samples of Kawabata et al., which expressly discloses general annealing conditions (namely, an annealing temperature of 700-1300 C).

Accordingly, the record establishes that Applicants' claimed steel and the steel of Kawabata et al. are produced by processes that are not identical or substantially identical. Instead, they differ significantly at least with respect to the control of precipitated W % and final annealing temperature.

c) THE BURDEN TO ESTABLISH NON-OBVIOUSNESS HAS NOT SHIFTED TO APPLICANTS

Applicants respectfully submit that the burden has not shifted to Applicants because the Office failed to set forth a *prima facie* case of obviousness under the standard of MPEP § 2112. Accordingly, Applicants are under no obligation to submit evidence of nonobviousness.

A *prima facie* case of obviousness under MPEP § 2112.01(I) can be made by reference to the compositions and processes of the prior art, but this requires that the claimed product and the prior art product are produced by identical or substantially identical processes. Specifically, MPEP § 2112.01(I) states that "[w]here the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established." (citing *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977)).

As set forth above, the evidence of record in this application shows that both the products and processes of Kawabata et al. and Applicants differ substantially and in ways directly related to Applicants' claimed precipitated W and Applicants' claimed average thermal expansion coefficient limitations. Therefore, the respective products and processes cannot be said to be substantially identical. For these reasons, the evidence of record precludes *prima facie* obviousness under MPEP § 2112.

III. ASSUMING ARGUENDO THAT THE OFFICE HAS ESTABLISHED PRIMA FACIE OBVIOUSNESS, APPLICANTS HAVE SUCCESSFULLY REBUTTED PRIMA FACIE OBVIOUSNESS BASED ON EVIDENCE OF RECORD IN THIS APPLICATION

In this Section, it is assumed *arguendo* that the Office had established *prima facie* obviousness. Applicants' do not admit that *prima facie* obviousness has been established and instead have shown that it has not been established. Nevertheless, in this Section Applicants demonstrate that, if made, a case of *prima facie* obviousness has been successfully rebutted based on the evidence already of record in this application.

MPEP § 2112 cited in the Office Action states that "[a] *prima facie* case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product." (emphasis in original)(citing *In re Best*, 562 F.2d at 1255, 195 USPQ at 433 and *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985)). MPEP § 2112.01(I). Accordingly, *In re Best* and MPEP § 2112 provide the standard for rebutting a case of *prima facie* obviousness that is based on similarities between prior art and claimed products and processes to account for a characteristic that is not expressly disclosed in the prior art. MPEP § 2112 relates to rejections based on inherency consistent with its title (Requirements of Rejection Based on Inherency; Burden of Proof), and *In re Best* is an inherency case.

Whether or not a rejection specifically refers to inherency (as in this case), a rejection based on similarities between prior art and claimed products and processes (to account for a characteristic that is not expressly disclosed in the prior art) can be rebutted under MPEP § 2112 by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product.

The record itself shows that the prior art steel product of Kawabata et al. does not necessarily possess the characteristics of the claimed product. More specifically, evidence of record demonstrates that the steel of Kawabata et al. does not necessarily possess Applicants' claimed precipitated W and Applicants' claimed average thermal expansion coefficient limitations.

It is especially clear that the steel product of Kawabata et al. does not necessarily possess the characteristics of Applicants' claimed product in view of the following new points regarding the record of this application.

a) NEW POINT 1: APPLICANTS' EXAMPLES ESTABLISH THAT THE STEEL OF KAWABATA ET AL. DOES NOT NECESSARILY POSSESS APPLICANTS' CLAIMED PRECIPITATED W AND AVERAGE THERMAL EXPANSION COEFFICIENT LIMITATIONS

Neither the claimed precipitated W % nor thermal expansion coefficient claimed by Applicants are necessarily present in the steel product disclosed by Kawabata et al. In fact, Applicants' examples show that the steel of Kawabata et al. would not have Applicants' claimed precipitated W % and thermal expansion coefficient.

For example, steel products C, D, E, O, P, Q, R, S, T all have elemental compositions within the ranges and general processing conditions disclosed by Kawabata et al. Nevertheless, every one of those steel products fall outside Applicants' claimed precipitated W % and thermal expansion coefficient ranges.

Illustrative example: For product C, for example, Applicants' Table 1 shows that all elemental components are within the general ranges and general processing conditions of Kawabata et al. based on the ranges disclosed by Kawabata et al. Nevertheless, the precipitated W % (0.580) and thermal expansion coefficient (greater than $12.6 \times 10^{-6}/^{\circ}\text{C}$) are outside Applicants' claimed ranges:

C	0.005	0.07	1.02	15.2	1.92	3.02	0.51	0.004	0.580	D	1010
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The same is true for steel products D, E, O, P, Q, R, S, T.

Accordingly, Applicants' examples show that the steel of Kawabata et al. would not necessarily have Applicants' claimed precipitated W % and thermal expansion coefficient.

Amendment Dated September 2, 2011
Reply to Office Action of May 5, 2011

b) NEW POINT 2: APPLICANTS' EXAMPLES ESTABLISH THAT THE STEEL OF KAWABATA ET AL. DOES NOT NECESSARILY POSSESS APPLICANTS' CLAIMED PRECIPITATED W AND AVERAGE THERMAL EXPANSION COEFFICIENT LIMITATIONS EVEN FOR VARIOUS STEELS HAVING THE SAME COMPOSITION

Neither the claimed precipitated W % nor thermal expansion coefficient claimed by Applicants are necessarily present in the steel product disclosed by Kawabata et al. even for various steels having the same composition as one another. In fact, Applicants' examples show that such steels would not necessarily have Applicants' claimed precipitated W % and thermal expansion coefficient.

For example, steel products 1, 2 and B have the same composition, a composition within the ranges and general processing conditions of Kawabata et al. Nevertheless, steel product B is outside Applicants' claimed precipitated W% and thermal expansion coefficient ranges. See also steel products 3, 4, 5, C, D (C and D are outside Applicants' claimed ranges); steel products 6, 7, E (E is outside Applicants' claimed ranges); and steel products N and O (O is outside Applicants' claimed ranges).

Illustrative example: Products 1, 2 and B have the same elemental components, which are all within the ranges and general processing conditions of Kawabata et al. Nevertheless, the precipitated W % (1.540) and thermal expansion coefficient (greater than $12.6 \times 10^{-6}/^{\circ}\text{C}$) for product B are outside Applicants' claimed ranges:

1	0.003	0.35	1.05	14.8	1.88	2.05	0.52	0.008	0.009	C
2	0.003	0.35	1.05	14.8	1.88	2.05	0.52	0.008	0.092	C
B	0.003	0.35	1.05	14.8	1.88	2.05	0.52	0.008	1.540	D

As noted above, the same is true for steel products steel products 3, 4, 5, C, D (C and D being outside Applicants' claimed ranges); steel products 6, 7, E (E being outside Applicants' claimed ranges); and steel products N and O (O being outside Applicants' claimed ranges).

Accordingly, Applicants' examples show in this additional way that the steel of Kawabata et al. would not necessarily have Applicants' claimed precipitated W % and thermal expansion coefficient.

c) NEW POINT 3: EXAMPLES OF KAWABATA ET AL. ESTABLISH THAT THE STEEL OF KAWABATA ET AL. DOES NOT NECESSARILY POSSESS APPLICANTS' CLAIMED W CONTENT AND PRECIPITATED W %

Additionally, steel sample nos. 1-85 and 87-101 of Kawabata et al. do not contain any W and therefore cannot possess Applicants' claimed precipitated W% of 0.005% to 0.1% in percent by mass. Also, steel sample no. 86, the only sample of Kawabata et al. containing W (1.5 wt%), would not contain Applicants' claimed precipitated W% of 0.005% to 0.1% in percent by mass as established by the Declaration of Yasushi Kato submitted with Applicants' Response on March 9, 2011.

For the foregoing reasons, the evidence of record (including the Kawabata et al. reference, Applicants' specification, and the Declaration of Yasushi Kato) clearly establishes that the steel of Kawabata et al. does not necessarily possess (1) Applicants' claimed precipitated W% of 0.005% to 0.1% in percent by mass, or (2) Applicants' claimed average thermal expansion coefficient between 20°C and 800°C less than about $12.6 \times 10^{-6}/^{\circ}\text{C}$. Accordingly, the evidence of record in this application successfully rebuts an obviousness rejection under the standard of *In re Best* as required by MPEP 2112.01(I), even assuming *arguendo* that *prima facie* obviousness has been established.

These new points refer to evidence that renders the rejection based on MPEP 2112 inappropriate and establishes that at least Applicants' claimed precipitated W % and Applicants' claimed average thermal expansion coefficient are not necessarily possessed in the steel of the Kawabata reference and would not be expected. In other words, based on the evidence currently of record in this application, the rejection based on Kawabata et al. fails to establish *prima facie* obviousness and, even if it were to establish *prima facie* obviousness, the rejection has been rebutted.³

³ Additionally, it is noted that whether a certain characteristic may be present in a reference is not sufficient to establish a case of *prima facie* obviousness under MPEP 2112.01(I). Instead, the missing characteristic must necessarily be present in the thing described in the reference. Specifically, MPEP § 2112(IV) states that:

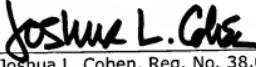
- "The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic" (citing *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993)).
- "Inherency ... may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." (citing *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999)).

For the foregoing reasons, Applicants' claimed precipitated W % and Applicants' claimed average thermal expansion coefficient would not be expected in Kawabata et al., and withdrawal of the rejection is respectfully requested.

Conclusion

At least for the foregoing reasons, favorable reconsideration of this application and withdrawal of the rejection of the claims are respectfully requested. A Notice of Allowance is respectfully requested.

Respectfully submitted,



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The Director is hereby authorized to charge or credit Deposit Account No. 18-0350 for any additional fees, or any underpayment or credit for overpayment in connection herewith.

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